Remarks/Arguments

Claim Summary

Claims 1-8, as amended on November 19, 2007, remain pending in the application.

35 U.S.C. §103

Claims 1-8 were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 7,002,540 to Aoki ("Aoki") in view of U.S. Patent No. 7,119,775 to Ozaki ("Ozaki"). Applicants respectfully traverse this rejection and request reconsideration thereof.

<u>Independent Claim 1</u>

Independent Claim 1 recites:

"(a) applying a working voltage and a black voltage resulting in a brightness curve varying with time during a vertical scanning period sequentially to a plurality of pixels on the liquid crystal display within the vertical scanning period;

(b) integrating the brightness curve with time during a duration of the brightness curve to obtain a product, and deriving an effective brightness from a quotient by dividing the product by the duration of the vertical scanning period;

(c) transferring the effective brightness into an effective light transmittance;

(d) iterating the aforesaid steps (a)-(c) to obtain a light transmittance vs. voltage curve; and

>   (e) defining a plurality of gray levels and gradation
>   voltages corresponding to the plurality of gray levels
>   according to the light transmittance vs. voltage curve".

Aoki fails to disclose that a working voltage and a *black voltage* results in a brightness curve varying with time during a vertical scanning period are sequentially applied to a plurality of pixels on the liquid crystal display within the vertical scanning period.

That is, referring to Fig. 3 and col. 1, lines 47-60 thereof, Aoki merely discloses the brightness change of a pseudo impulse type display device. As shown in Fig. 3, the brightness changes from a certain high level to a constant low level during each frame. Aoki does not teach or suggest that a black voltage is applied to the pixels of the liquid crystal display during each frame.

Further, Ozaki fails to disclose that the brightness curve is integrated with time during a duration of the brightness curve to obtain a product, and an *effective brightness is derived from a quotient by dividing the product by the duration of the vertical scanning period*. Referring to column 7, lines 20-38, column 9, lines 18-19 and 23-30, and Fig. 11, 12, 15, 16 thereof, Ozaki merely discloses that the amount of transmitted light is integrated over the LED light emission period and liquid crystals are driven taking into account the integrated area of the amount of transmitted light.

It appears that Ozaki directly utilizes the integrated area of the amount of transmitted light to drive the liquid crystals, but does not teach or suggest *the effective brightness and how to derive the effective brightness*. In fact, the gradation voltage corresponding to each gray level can also be defined based on the *effective brightness*, and it can satisfy the time factor of the brightness sensed by the viewer's vision because of the existence of the delay phenomenon in the optical response. The effective brightness is not obvious to a person of ordinary skill in the art to apply the method of integrating the amount of transmitted light.

Furthermore, the method disclosed by Ozaki is intended to achieve more visually appealing fine gradations, but cannot overcome the issue of the delay phenomenon in the optical response.

For at least the reasons stated above, Applicants respectfully contend that the combination of steps (a) and (b) of claim 1 is not found in the Aoki and Ozaki references, taken individually or in combination.

In addition, steps (c), (d) and (e) of claim 1 are also not obvious. The Examiner apparently contends that steps (d) and (e) are stated or implied in the specification of the instant application at page 2, line 23 to page 3, line 3. In fact, the specification of the present application does not state or imply steps (d) and (e) based on the features of the effective brightness.

The Examiner is respectfully reminded that the Patent Office bears the initial burden of setting forth a prima facie case of obviousness, and to that end, the Patent Office must *specifically* identify where in the prior art the claimed limitations are found.

For *at least* the reasons stated above, Applicants respectfully contend that claim 1, and the claims 2-5 dependent thereon, are not rendered obvious by the teachings of Aoki and Ozaki.

<div align="center">Independent Claim 6</div>

Independent Claim 6 recites:

> "(a) applying a working voltage and a black voltage resulting in a brightness curve varying with time during a vertical scanning period sequentially to a plurality of pixels on the liquid crystal display within the vertical scanning period;
>
> (b) integrating the brightness curve with time during a duration of the brightness curve to obtain a product, and deriving an effective brightness from a

quotient by dividing the product by the duration of the
vertical scanning period;

(c) transferring the effective brightness into an
effective light transmittance;

(d) iterating the aforesaid steps (a)-(c) to obtain a
light transmittance vs. voltage curve; and

(e) defining a plurality of gray levels and gradation
voltages corresponding to the plurality of gray levels
according to the light transmittance vs. voltage curve;

wherein each of the gradation voltages is higher
than each of the gradation voltages determined by a steady
light transmittance vs. voltage curve for the same gray
level so as to accelerate the response speed of the liquid
crystal display".

Aoki fails to disclose that a working voltage and a *black voltage* results in a
brightness curve varying with time during a vertical scanning period are sequentially
applied to a plurality of pixels on the liquid crystal display within the vertical
scanning period. Referring to Fig. 3 and col. 1 lines 47-60, Aoki merely discloses
that the brightness change of a pseudo impulse type display device. As shown in Fig.
3, the brightness changes from a certain high level to a constant low level during each
frame, and however Aoki does not teach or suggest that a black voltage is applied to
the pixels of the liquid crystal display during each frame.

Ozaki fails to disclose that the brightness curve is integrated with time during a
duration of the brightness curve to obtain a product, and an *effective brightness is
derived from a quotient by dividing the product by the duration of the vertical
scanning period*. Referring to column 7, lines 20-38, column 9, lines 18-19 and 23-
30, and Fig. 11, 12, 15, 16 thereof, Ozaki merely discloses that the amount of
transmitted light is integrated over the LED light emission period and liquid crystals
are driven taking into account the integrated area of the amount of transmitted light.

It appears that Ozaki directly utilizes the integrated area of the amount of transmitted light to drive the liquid crystals, but does not teach or suggest *the effective brightness and how to derive the effective brightness*. In fact, the gradation voltage corresponding to each gray level can also be defined based on the *effective brightness*, and it can satisfy the time factor of the brightness felt by the viewer's vision because of the existence of the delay phenomenon in the optical response. The effect brightness is not obvious to a person of ordinary skill in the art to apply the method of integrating the amount of transmitted light.

Furthermore, the method disclosed by Ozaki is intended to achieve more visually appealing fine gradations, but cannot overcome the issue of the delay phenomenon in the optical response.

For at least the reasons stated above, Applicants respectfully contend that the combination of steps (a) and (b) of claim 1 is not found in the Aoki and Ozaki references, taken individually or in combination.

In addition, steps (c), (d) and (e) of claim 1 are also not obvious. The Examiner apparently contends that steps (d) and (e) are stated or implied in the specification of the instant application at page 2, line 23 to page 3, line 3. In fact, the specification of the present application does not state or imply steps (d) and (e) based on the features of the effective brightness.

The Examiner is respectfully reminded that the Patent Office bears the initial burden of setting forth a prima facie case of obviousness, and to that end, the Patent Office must *specifically* identify where in the prior art the claimed limitations are found.

For *at least* the reasons stated above, Applicants respectfully contend that claim 6, and the claims 7-8 dependent thereon, are not rendered obvious by the teachings of Aoki and Ozaki.

Conclusion

No other issues remaining, reconsideration and favorable action upon the claims 1-8 now pending in the application are requested.

Respectfully submitted,

VOLENTINE & WHITT, PLLC

/Adam C. Volentine/

Adam C. Volentine
Reg. No. 33289

Customer No. 20987
Volentine & Whitt, PLLC
Suite 1260
11951 Freedom Drive
Reston, VA 20190
Tel. (571) 283-0720

Date: June 30, 2008